

## SEQUENCE LISTING

<110> Fishman, Jay A.

<120> MOLECULAR SEQUENCE OF SWINE RETROVIRUS  
AND METHODS OF USE

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<141> 2003-11-26

<150> US 09/661,858

<151> 2000-09-14

<150> US 08/766,528

<151> 1996-12-13

<150> US 08/572,645

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<170> FastSEQ for Windows Version 4.0

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23

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<400> 26

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<210> 27

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<212> DNA

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<220>

<223> Primer

<400> 27

tggtcctggg ccttgggttg gggg

24

<210> 28

<211> 22

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<213> Artificial Sequence

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<223> Primer

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gcagcagcgc taaaatgggg gc

22

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<210> 32  
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<210> 34  
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<400> 34  
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<400> 35  
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<210> 41

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<210> 42  
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<210> 44  
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<400> 46

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<210> 47

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24

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<223> Primer

<400> 48

gatgaacagg cagacatctg

20

<210> 49

<211> 20

<212> DNA

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<220>

<223> Primer

<400> 49

cgtttacaga caagctgtga

20

<210> 50

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 50

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19

<210> 51

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<400> 57  
cgaatggaga gatccaggta 20

<210> 58  
<211> 20  
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<223> Primer

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<210> 59  
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<210> 62

<211> 20

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<400> 63

cgatagtcac tagtcccagg 20

<210> 64

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 64

tgctggtttg catcaagacc g 21

<210> 65

<211> 20

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<223> Primer

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gtcgcaaagg catacctgct 20

<210> 66

<211> 20

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<223> Primer

<400> 66

acagagcctc tgctaagaag 20

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<220>  
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 gcagctgttg acaatcatc 19

<210> 68  
 <211> 20  
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<400> 68  
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<210> 69  
 <211> 19  
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<400> 69  
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<210> 70  
 <211> 19  
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<210> 71  
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<220>  
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<210> 72  
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<212> DNA  
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<220>  
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<400> 72  
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<210> 73  
 <211> 21  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Primer

<400> 73  
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<210> 74  
 <211> 19  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Primer

<400> 74  
 gagtacatct ctctaggca 19

<210> 75  
 <211> 524  
 <212> PRT  
 <213> Porcine endogenous retrovirus

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 1 5 10 15  
 Thr Glu Val Arg Ser Arg Ala His Asn Leu Ser Val Gln Val Lys Lys  
 20 25 30  
 Gly Pro Trp Gln Thr Phe Cys Ala Ser Glu Trp Pro Thr Phe Asp Val  
 35 40 45  
 Gly Trp Pro Ser Glu Gly Thr Phe Asn Ser Glu Ile Ile Leu Ala Val  
 50 55 60  
 Lys Ala Ile Ile Phe Gln Thr Gly Pro Gly Ser His Pro Asp Gln Glu  
 65 70 75 80  
 Pro Tyr Ile Leu Thr Trp Gln Asp Leu Ala Glu Asp Pro Pro Pro Trp  
 85 90 95  
 Val Lys Pro Trp Leu Asn Lys Pro Arg Lys Pro Gly Pro Arg Ile Leu  
 100 105 110  
 Ala Leu Gly Glu Lys Asn Lys His Ser Ala Glu Lys Val Glu Pro Ser  
 115 120 125  
 Pro Arg Ile Tyr Pro Glu Ile Glu Glu Pro Pro Thr Trp Pro Glu Pro  
 130 135 140  
 Gln Pro Val Pro Pro Pro Tyr Pro Ala Gln Gly Ala Val Arg Gly  
 145 150 155 160

Pro	Ser	Ala	Pro	Pro	Gly	Ala	Pro	Val	Val	Glu	Gly	Pro	Ala	Ala	Gly	
				165					170					175		
Thr	Arg	Ser	Arg	Arg	Gly	Ala	Thr	Pro	Glu	Arg	Thr	Asp	Glu	Ile	Ala	
			180					185					190			
Ile	Leu	Pro	Leu	Arg	Thr	Tyr	Gly	Pro	Pro	Met	Pro	Gly	Gly	Gln	Leu	
		195					200					205				
Gln	Pro	Leu	Gln	Tyr	Trp	Pro	Phe	Ser	Ser	Ala	Asp	Leu	Tyr	Asn	Trp	
	210					215					220					
Lys	Thr	Asn	His	Pro	Pro	Phe	Ser	Glu	Asp	Pro	Gln	Arg	Leu	Thr	Gly	
225				230						235					240	
Leu	Val	Glu	Ser	Leu	Met	Phe	Ser	His	Gln	Pro	Thr	Trp	Asp	Asp	Cys	
			245						250					255		
Gln	Gln	Leu	Leu	Gln	Thr	Leu	Phe	Thr	Thr	Glu	Glu	Arg	Glu	Arg	Ile	
		260						265					270			
Leu	Leu	Glu	Ala	Lys	Lys	Asn	Val	Pro	Gly	Ala	Asp	Gly	Arg	Pro	Thr	
	275						280					285				
Gln	Leu	Gln	Asn	Glu	Ile	Asp	Met	Gly	Phe	Pro	Leu	Thr	Arg	Pro	Gly	
	290					295					300					
Trp	Asp	Tyr	Asn	Thr	Ala	Glu	Gly	Arg	Glu	Ser	Leu	Lys	Ile	Tyr	Arg	
305					310					315					320	
Gln	Ala	Leu	Val	Ala	Gly	Leu	Arg	Gly	Ala	Ser	Arg	Arg	Pro	Thr	Asn	
			325						330					335		
Leu	Ala	Lys	Val	Arg	Glu	Val	Met	Gln	Gly	Pro	Asn	Glu	Pro	Pro	Ser	
		340						345					350			
Val	Phe	Leu	Glu	Arg	Leu	Met	Glu	Ala	Phe	Arg	Arg	Phe	Thr	Pro	Phe	
	355					360						365				
Asp	Pro	Thr	Ser	Glu	Ala	Gln	Lys	Ala	Ser	Val	Ala	Leu	Ala	Phe	Ile	
	370					375					380					
Gly	Gln	Ser	Ala	Leu	Asp	Ile	Arg	Lys	Lys	Leu	Gln	Arg	Leu	Glu	Gly	
385					390					395					400	
Leu	Gln	Glu	Ala	Glu	Leu	Arg	Asp	Leu	Val	Arg	Glu	Ala	Glu	Lys	Val	
			405						410					415		
Tyr	Tyr	Arg	Arg	Glu	Thr	Glu	Glu	Glu	Lys	Glu	Gln	Arg	Lys	Glu	Lys	
		420						425					430			
Glu	Arg	Glu	Gln	Arg	Glu	Glu	Arg	Arg	Asp	Arg	Arg	Gln	Glu	Lys	Asn	
	435						440					445				
Leu	Thr	Lys	Ile	Leu	Ala	Ala	Val	Val	Glu	Gly	Lys	Ser	Ser	Arg	Glu	
	450					455					460					
Arg	Glu	Arg	Asp	Phe	Arg	Lys	Ile	Arg	Ser	Gly	Pro	Arg	Gln	Ser	Gly	
465					470					475					480	
Asn	Leu	Gly	Asn	Arg	Thr	Pro	Leu	Asp	Lys	Asp	Gln	Cys	Ala	Tyr	Cys	
			485						490					495		
Lys	Glu	Lys	Gly	His	Trp	Ala	Arg	Asn	Cys	Pro	Lys	Lys	Gly	Asn	Lys	
		500						505					510			
Gly	Pro	Lys	Val	Leu	Ala	Leu	Glu	Asp	Lys	Asp						
	515						520									

&lt;210&gt; 76

&lt;211&gt; 401

&lt;212&gt; PRT

&lt;213&gt; Porcine endogenous retrovirus

&lt;400&gt; 76

Met	Gly	Ala	Thr	Gly	Gln	Arg	Gln	Tyr	Pro	Trp	Thr	Thr	Arg	Arg	Thr	
1				5				10					15			
Val	Asp	Leu	Gly	Val	Gly	Arg	Val	Thr	His	Ser	Phe	Leu	Val	Ile	Pro	

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<210> 77
<211> 271
<212> FRT
<213> Porcine endogenous retrovirus
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<400> 77



Lys	Arg	Gly	Leu	Leu	Thr	Ser	Ala	Gly	Arg	Glu	Ile	Lys	Asn	Lys	Gln
1				5					10					15	
Glu	Ile	Leu	Ser	Leu	Leu	Glu	Ala	Leu	His	Leu	Pro	Lys	Arg	Leu	Ala
			20					25					30		
Ile	Ile	His	Cys	Pro	Gly	His	Gln	Lys	Ala	Lys	Asp	Leu	Ile	Ser	Arg
		35					40					45			
Gly	Asn	Gln	Met	Ala	Asp	Arg	Val	Ala	Lys	Gln	Ala	Ala	Gln	Ala	Val
	50					55					60				
Asn	Leu	Leu	Pro	Ile	Ile	Glu	Thr	Pro	Lys	Ala	Pro	Glu	Pro	Arg	Arg
65					70					75					80
Gln	Tyr	Thr	Leu	Glu	Asp	Trp	Gln	Glu	Ile	Lys	Lys	Ile	Asp	Gln	Phe
			85						90					95	
Ser	Glu	Thr	Pro	Glu	Gly	Thr	Cys	Tyr	Thr	Ser	Tyr	Gly	Lys	Glu	Ile
			100					105					110		
Leu	Pro	His	Lys	Glu	Gly	Leu	Glu	Tyr	Val	Gln	Gln	Ile	His	Arg	Leu
		115					120						125		
Thr	His	Leu	Gly	Thr	Lys	His	Leu	Gln	Gln	Leu	Val	Arg	Thr	Ser	Pro
	130					135						140			
Tyr	His	Val	Leu	Arg	Leu	Pro	Gly	Val	Ala	Asp	Ser	Val	Val	Lys	His
145					150					155					160
Cys	Val	Pro	Cys	Gln	Leu	Val	Asn	Ala	Asn	Pro	Ser	Arg	Ile	Pro	Pro
			165						170					175	
Gly	Lys	Arg	Leu	Arg	Gly	Ser	His	Pro	Gly	Ala	His	Trp	Glu	Val	Asp
			180					185					190		
Phe	Thr	Glu	Val	Lys	Pro	Ala	Lys	Tyr	Gly	Asn	Lys	Tyr	Leu	Leu	Val
		195					200					205			
Phe	Val	Asp	Thr	Phe	Ser	Gly	Trp	Val	Glu	Ala	Tyr	Pro	Thr	Lys	Lys
	210					215					220				
Glu	Thr	Ser	Thr	Val	Val	Ala	Lys	Lys	Ile	Leu	Glu	Glu	Ile	Phe	Pro
225					230					235					240
Arg	Phe	Gly	Ile	Pro	Lys	Val	Ile	Gly	Ser	Asp	Asn	Gly	Pro	Ala	Phe
				245					250					255	
Val	Ala	Gln	Val	Ser	Gln	Gly	Leu	Ala	Lys	Ile	Leu	Gly	Ile	Asp	
			260					265					270		

&lt;210&gt; 78

&lt;211&gt; 139

&lt;212&gt; PRT

&lt;213&gt; Porcine endogenous retrovirus

&lt;400&gt; 78

Lys	Leu	His	Cys	Ala	Tyr	Arg	Pro	Gln	Ser	Ser	Gly	Gln	Val	Glu	Arg
1				5					10					15	
Met	Asn	Arg	Thr	Ile	Lys	Glu	Thr	Leu	Thr	Lys	Leu	Thr	Thr	Glu	Thr
			20					25					30		
Gly	Ile	Asn	Asp	Trp	Met	Ala	Leu	Leu	Pro	Phe	Val	Leu	Phe	Arg	Val
		35					40					45			
Arg	Asn	Thr	Pro	Gly	Gln	Phe	Gly	Leu	Thr	Pro	Tyr	Lys	Leu	Leu	Tyr
	50					55					60				
Gly	Gly	Pro	Pro	Pro	Leu	Ala	Glu	Ile	Ala	Phe	Ala	His	Ser	Ala	Asp
65					70					75					80
Val	Leu	Leu	Ser	Gln	Pro	Leu	Phe	Ser	Arg	Leu	Lys	Ala	Leu	Glu	Trp
			85					90						95	
Val	Arg	Gln	Arg	Ala	Trp	Lys	Gln	Leu	Arg	Glu	Ala	Tyr	Ser	Gly	Gly
			100					105					110		
Asp	Leu	Gln	Val	Pro	His	Arg	Phe	Gln	Val	Gly	Asp	Ser	Val	Tyr	Val

115	120	125
Arg Arg His Arg Ala Gly Asn Leu Glu Thr Arg		
130	135	

&lt;210&gt; 79

&lt;211&gt; 657

&lt;212&gt; PRT

&lt;213&gt; Porcine endogenous retrovirus

&lt;400&gt; 79

Lys Gly Pro Tyr Leu Val Leu Leu Thr Thr Pro Thr Ala Val Lys Val		
1 5 10 15		
Glu Gly Ile Pro Leu Ser Phe Ala Ser Ile Ala Trp Phe Leu Thr Leu		
20 25 30		
Ser Ile Thr Pro Gln Val Asn Gly Lys Arg Leu Val Asp Ser Pro Asn		
35 40 45		
Ser His Lys Pro Leu Ser Leu Thr Trp Leu Leu Thr Asp Ser Gly Thr		
50 55 60		
Gly Ile Asn Ile Asn Ser Thr Gln Gly Glu Ala Pro Leu Gly Thr Trp		
65 70 75 80		
Trp Pro Glu Leu Tyr Val Cys Leu Arg Ser Val Ile Pro Gly Leu Asn		
85 90 95		
Asp Gln Ala Thr Pro Pro Asp Val Leu Arg Ala Tyr Gly Phe Tyr Val		
100 105 110		
Cys Pro Gly Pro Pro Asn Asn Glu Glu Tyr Cys Gly Asn Pro Gln Asp		
115 120 125		
Phe Phe Cys Lys Gln Trp Ser Cys Ile Thr Ser Asn Asp Gly Asn Trp		
130 135 140		
Lys Trp Pro Val Ser Gln Gln Asp Arg Val Ser Tyr Ser Phe Val Asn		
145 150 155 160		
Asn Pro Thr Ser Tyr Asn Gln Phe Asn Tyr Gly His Gly Arg Trp Lys		
165 170 175		
Asp Trp Gln Gln Arg Val Gln Lys Asp Val Arg Asn Lys Gln Ile Ser		
180 185 190		
Cys His Ser Leu Asp Leu Asp Tyr Leu Lys Ile Ser Phe Thr Glu Lys		
195 200 205		
Gly Lys Gln Glu Asn Ile Gln Lys Trp Val Asn Gly Ile Ser Trp Gly		
210 215 220		
Ile Val Tyr Tyr Gly Gly Ser Gly Arg Lys Lys Gly Ser Val Leu Thr		
225 230 235 240		
Ile Arg Leu Arg Ile Glu Thr Gln Met Glu Pro Pro Val Ala Ile Gly		
245 250 255		
Pro Asn Lys Gly Leu Ala Glu Gln Gly Pro Pro Ile Gln Glu Gln Arg		
260 265 270		
Pro Ser Pro Asn Pro Ser Asp Tyr Asn Thr Thr Ser Gly Ser Val Pro		
275 280 285		
Thr Glu Pro Asn Ile Thr Ile Lys Thr Gly Ala Lys Leu Phe Ser Leu		
290 295 300		
Ile Gln Gly Ala Phe Gln Ala Leu Asn Ser Thr Thr Pro Glu Ala Thr		
305 310 315 320		
Ser Ser Cys Trp Leu Cys Leu Ala Ser Gly Pro Pro Tyr Tyr Glu Gly		
325 330 335		
Met Ala Arg Gly Gly Lys Phe Asn Val Thr Lys Glu His Arg Asp Gln		
340 345 350		
Cys Thr Trp Gly Ser Gln Asn Lys Leu Thr Leu Thr Glu Val Ser Gly		
355 360 365		

Lys Gly Thr Cys Ile Gly Met Val Pro Pro Ser His Gln His Leu Cys  
 370 375 380  
 Asn His Thr Glu Ala Phe Asn Arg Thr Ser Glu Ser Gln Tyr Leu Val  
 385 390 395 400  
 Pro Gly Tyr Asp Arg Trp Trp Ala Cys Asn Thr Gly Leu Thr Pro Cys  
 405 410 415  
 Val Ser Thr Leu Val Phe Asn Gln Thr Lys Asp Phe Cys Val Met Val  
 420 425 430  
 Gln Ile Val Pro Arg Val Tyr Tyr Tyr Pro Glu Lys Ala Val Leu Asp  
 435 440 445  
 Glu Tyr Asp Tyr Arg Tyr Asn Arg Pro Lys Arg Glu Pro Ile Ser Leu  
 450 455 460  
 Thr Leu Ala Val Met Leu Gly Leu Gly Val Ala Ala Gly Val Gly Thr  
 465 470 475 480  
 Gly Thr Ala Ala Leu Ile Thr Gly Pro Gln Gln Leu Glu Lys Gly Leu  
 485 490 495  
 Ser Asn Leu His Arg Ile Val Thr Glu Asp Leu Gln Ala Leu Glu Lys  
 500 505 510  
 Ser Val Ser Asn Leu Glu Glu Ser Leu Thr Ser Leu Ser Glu Val Val  
 515 520 525  
 Leu Gln Asn Arg Arg Gly Leu Asp Leu Leu Phe Leu Lys Glu Gly Gly  
 530 535 540  
 Leu Cys Val Ala Leu Lys Glu Gln Cys Cys Phe Tyr Val Asp His Ser  
 545 550 555 560  
 Gly Ala Ile Arg Asp Ser Met Ser Lys Leu Arg Glu Arg Leu Glu Arg  
 565 570 575  
 Arg Arg Arg Glu Arg Glu Ala Asp Gln Gly Trp Phe Glu Gly Trp Phe  
 580 585 590  
 Asn Arg Ser Pro Trp Met Thr Thr Leu Leu Ser Ala Leu Thr Gly Pro  
 595 600 605  
 Leu Val Val Leu Leu Leu Leu Leu Thr Val Gly Pro Cys Leu Ile Asn  
 610 615 620  
 Arg Phe Val Ala Phe Val Arg Glu Arg Val Ser Ala Val Gln Ile Met  
 625 630 635 640  
 Val Leu Arg Gln Gln Tyr Gln Gly Leu Leu Ser Gln Gly Glu Thr Asp  
 645 650 655  
 Leu

<210> 80

<211> 524

<212> PRT

<213> Porcine endogenous retrovirus

<400> 80

Met Gly Gln Thr Val Thr Thr Pro Leu Ser Leu Thr Leu Asp His Trp  
 1 5 10 15  
 Thr Glu Val Lys Ser Arg Ala His Asn Leu Ser Val Gln Val Lys Lys  
 20 25 30  
 Gly Pro Trp Gln Thr Phe Cys Val Ser Glu Trp Pro Thr Phe Asp Val  
 35 40 45  
 Gly Trp Pro Ser Glu Gly Thr Phe Asn Ser Glu Ile Ile Leu Ala Val  
 50 55 60  
 Lys Ala Val Ile Phe Gln Thr Gly Pro Gly Ser His Pro Asp Gln Glu  
 65 70 75 80  
 Pro Tyr Ile Leu Thr Trp Gln Asp Leu Ala Glu Asp Pro Pro Pro Trp



<210> 81  
 <211> 1148  
 <212> PRT  
 <213> Porcine endogenous retrovirus

<400> 81

Met	Gly	Ala	Thr	Gly	Gln	Gln	Gln	Tyr	Pro	Trp	Thr	Thr	Arg	Arg	Thr
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Val	Asp	Leu	Gly	Val	Gly	Arg	Val	Thr	His	Ser	Phe	Leu	Val	Ile	Pro
			20					25					30		
Glu	Cys	Pro	Ala	Pro	Leu	Leu	Gly	Arg	Asp	Leu	Leu	Thr	Lys	Met	Gly
		35					40					45			
Ala	Gln	Ile	Ser	Phe	Glu	Gln	Gly	Lys	Pro	Glu	Val	Ser	Ala	Asn	Asn
		50				55					60				
Lys	Pro	Ile	Thr	Val	Leu	Thr	Leu	Gln	Leu	Asp	Asp	Glu	Tyr	Arg	Leu
65					70					75				80	
Tyr	Ser	Pro	Leu	Val	Lys	Pro	Asp	Gln	Asn	Ile	Gln	Phe	Trp	Leu	Glu
			85					90						95	
Gln	Phe	Pro	Gln	Ala	Trp	Ala	Glu	Thr	Ala	Gly	Met	Gly	Leu	Ala	Lys
			100				105						110		
Gln	Val	Pro	Pro	Gln	Val	Ile	Gln	Leu	Lys	Ala	Ser	Ala	Thr	Pro	Val
		115					120					125			
Ser	Val	Arg	Gln	Tyr	Pro	Leu	Ser	Lys	Glu	Ala	Gln	Gln	Gly	Ile	Arg
		130				135					140				
Pro	His	Val	Gln	Arg	Leu	Ile	Gln	Gln	Gly	Ile	Leu	Val	Pro	Val	Gln
145					150					155				160	
Ser	Pro	Trp	Asn	Thr	Pro	Leu	Leu	Pro	Val	Arg	Lys	Pro	Gly	Thr	Asn
			165						170					175	
Asp	Tyr	Arg	Pro	Val	Gln	Asp	Leu	Arg	Glu	Val	Asn	Lys	Arg	Val	Gln
			180					185					190		
Asp	Ile	His	Pro	Thr	Val	Pro	Asn	Pro	Tyr	Asn	Leu	Leu	Cys	Ala	Leu
		195					200				205				
Pro	Pro	Gln	Arg	Ser	Trp	Tyr	Thr	Val	Leu	Asp	Leu	Lys	Asp	Ala	Phe
		210				215					220				
Phe	Cys	Leu	Arg	Leu	His	Pro	Thr	Ser	Gln	Pro	Leu	Phe	Ala	Phe	Glu
225					230					235				240	
Trp	Arg	Asp	Pro	Gly	Thr	Gly	Arg	Thr	Gly	Gln	Leu	Thr	Trp	Thr	Arg
			245						250					255	
Leu	Pro	Gln	Gly	Phe	Lys	Asn	Ser	Pro	Thr	Ile	Phe	Asp	Glu	Ala	Leu
		260						265					270		
His	Arg	Asp	Leu	Ala	Asn	Phe	Arg	Ile	Gln	His	Pro	Gln	Val	Thr	Leu
		275					280					285			
Leu	Gln	Tyr	Val	Asp	Asp	Leu	Leu	Leu	Ala	Gly	Ala	Thr	Lys	Gln	Asp
		290				295					300				
Cys	Leu	Glu	Gly	Thr	Lys	Ala	Leu	Leu	Leu	Glu	Leu	Ser	Asp	Leu	Gly
305					310					315				320	
Tyr	Arg	Ala	Ser	Ala	Lys	Lys	Ala	Gln	Ile	Cys	Arg	Arg	Glu	Val	Thr
			325						330					335	
Tyr	Leu	Gly	Tyr	Ser	Leu	Arg	Asp	Gly	Gln	Arg	Trp	Leu	Thr	Glu	Ala
		340						345					350		
Arg	Lys	Lys	Thr	Val	Val	Gln	Ile	Pro	Ala	Pro	Thr	Thr	Ala	Lys	Gln
		355					360						365		
Met	Arg	Glu	Phe	Leu	Gly	Thr	Ala	Gly	Phe	Cys	Arg	Leu	Trp	Ile	Pro
		370				375					380				
Gly	Phe	Ala	Thr	Leu	Ala	Ala	Pro	Leu	Tyr	Pro	Leu	Thr	Lys	Glu	Lys
385					390					395				400	
Gly	Glu	Phe	Ser	Trp	Ala	Pro	Glu	His	Gln	Lys	Ala	Phe	Asp	Ala	Ile

Lys	Lys	Ala	Leu	Leu	Ser	Ala	Pro	Ala	Leu	Ala	Leu	Pro	Asp	Val	Thr	
			420					425					430			
Lys	Pro	Phe	Thr	Leu	Tyr	Val	Asp	Glu	Arg	Lys	Gly	Val	Ala	Arg	Gly	
		435					440					445				
Val	Leu	Thr	Gln	Thr	Leu	Gly	Pro	Trp	Arg	Arg	Pro	Val	Ala	Tyr	Leu	
		450				455					460					
Ser	Lys	Lys	Leu	Asp	Pro	Val	Ala	Ser	Gly	Trp	Pro	Ile	Cys	Leu	Lys	
465					470					475					480	
Ala	Ile	Ala	Ala	Val	Ala	Ile	Leu	Val	Lys	Asp	Ala	Asp	Lys	Leu	Thr	
				485					490					495		
Leu	Gly	Gln	Asn	Ile	Thr	Val	Ile	Ala	Pro	His	Ala	Leu	Glu	Asn	Ile	
			500					505				510				
Val	Arg	Gln	Pro	Pro	Asp	Arg	Trp	Met	Thr	Asn	Ala	Arg	Met	Thr	His	
		515					520					525				
Tyr	Gln	Ser	Leu	Leu	Leu	Thr	Glu	Arg	Val	Thr	Phe	Ala	Pro	Pro	Ala	
		530				535					540					
Ala	Leu	Asn	Pro	Ala	Thr	Leu	Leu	Pro	Glu	Glu	Thr	Asp	Glu	Pro	Val	
545					550				555						560	
Thr	His	Asp	Cys	His	Gln	Leu	Leu	Ile	Glu	Glu	Thr	Gly	Val	Arg	Lys	
				565					570					575		
Asp	Leu	Thr	Asp	Ile	Pro	Leu	Thr	Gly	Glu	Val	Leu	Thr	Trp	Phe	Thr	
			580					585					590			
Asp	Gly	Ser	Ser	Tyr	Val	Val	Glu	Gly	Lys	Arg	Met	Ala	Gly	Ala	Ala	
		595				600						605				
Val	Val	Asp	Gly	Thr	Arg	Thr	Ile	Trp	Ala	Ser	Ser	Leu	Pro	Glu	Gly	
		610				615					620					
Thr	Ser	Ala	Gln	Lys	Ala	Glu	Leu	Met	Ala	Leu	Thr	Gln	Ala	Leu	Arg	
625					630					635					640	
Leu	Ala	Glu	Gly	Lys	Ser	Ile	Asn	Ile	Tyr	Thr	Asp	Ser	Arg	Tyr	Ala	
				645					650					655		
Phe	Ala	Thr	Ala	His	Val	His	Gly	Ala	Ile	Tyr	Lys	Gln	Arg	Gly	Leu	
			660				665					670				
Leu	Thr	Ser	Ala	Gly	Arg	Glu	Ile	Lys	Asn	Lys	Glu	Glu	Ile	Leu	Ser	
		675					680					685				
Leu	Leu	Glu	Ala	Val	His	Leu	Pro	Lys	Arg	Leu	Ala	Ile	Ile	His	Cys	
		690				695					700					
Pro	Gly	His	Gln	Lys	Ala	Lys	Asp	Leu	Ile	Ser	Arg	Gly	Asn	Gln	Met	
705					710					715					720	
Ala	Asp	Arg	Val	Ala	Lys	Gln	Ala	Ala	Gln	Gly	Val	Asn	Leu	Leu	Pro	
				725					730							

Lys Pro Ala Lys Tyr Gly Asn Lys Tyr Leu Leu Val Phe Val Asp Thr  
 865 870 875 880  
 Phe Ser Gly Trp Val Glu Ala Tyr Pro Thr Lys Lys Glu Thr Ser Thr  
 885 890 895  
 Val Val Ala Lys Lys Ile Leu Glu Glu Ile Phe Pro Arg Phe Gly Ile  
 900 905 910  
 Pro Lys Val Ile Gly Ser Asp Asn Gly Pro Ala Phe Val Ala Gln Val  
 915 920 925  
 Ser Gln Gly Leu Ala Lys Ile Leu Gly Ile Asp Trp Lys Leu His Cys  
 930 935 940  
 Ala Tyr Arg Pro Gln Ser Ser Gly Gln Val Glu Arg Met Asn Arg Thr  
 945 950 955 960  
 Ile Lys Glu Thr Leu Thr Lys Leu Thr Ala Glu Thr Gly Val Asn Asp  
 965 970 975  
 Trp Ile Ala Leu Leu Pro Phe Val Leu Phe Arg Val Arg Asn Thr Pro  
 980 985 990  
 Gly Gln Phe Gly Leu Thr Pro Tyr Glu Leu Leu Tyr Gly Gly Pro Pro  
 995 1000 1005  
 Pro Leu Val Glu Ile Ala Ser Val His Ser Ala Asp Val Leu Leu Ser  
 1010 1015 1020  
 Gln Pro Leu Phe Ser Arg Leu Lys Ala Leu Glu Trp Val Arg Gln Arg  
 1025 1030 1035 1040  
 Ala Trp Arg Gln Leu Arg Glu Ala Tyr Ser Gly Gly Gly Asp Leu Gln  
 1045 1050 1055  
 Ile Pro His Arg Phe Gln Val Gly Asp Ser Val Tyr Val Arg Arg His  
 1060 1065 1070  
 Arg Ala Gly Asn Leu Glu Thr Arg Trp Lys Gly Pro Tyr Leu Val Leu  
 1075 1080 1085  
 Leu Thr Thr Pro Thr Ala Val Lys Val Glu Gly Ile Ser Thr Trp Ile  
 1090 1095 1100  
 His Ala Ser His Val Lys Pro Ala Pro Pro Pro Asp Ser Gly Trp Lys  
 1105 1110 1115 1120  
 Ala Glu Lys Thr Glu Asn Pro Leu Lys Leu Arg Leu His Arg Val Val  
 1125 1130 1135  
 Pro Tyr Ser Val Asn Asn Leu Ser Asp  
 1140 1145

&lt;210&gt; 82

&lt;211&gt; 638

&lt;212&gt; PRT

&lt;213&gt; Porcine endogenous retrovirus

&lt;400&gt; 82

Met His Pro Thr Leu Asn Arg Arg His Leu Pro Ile Arg Gly Gly Lys  
 1 5 10 15  
 Pro Lys Arg Leu Lys Ile Pro Leu Ser Phe Ala Ser Ile Ala Trp Phe  
 20 25 30  
 Leu Thr Leu Ser Ile Thr Ser Gln Thr Asn Gly Met Arg Ile Gly Asp  
 35 40 45  
 Ser Leu Asn Ser His Lys Pro Leu Ser Leu Thr Trp Leu Ile Thr Asp  
 50 55 60  
 Ser Gly Thr Gly Ile Asn Ile Asn Asn Thr Gln Gly Glu Ala Pro Leu  
 65 70 75 80  
 Gly Thr Trp Trp Pro Asp Leu Tyr Val Cys Leu Arg Ser Val Ile Pro  
 85 90 95  
 Ser Leu Thr Ser Pro Pro Asp Ile Leu His Ala His Gly Phe Tyr Val

Cys	Pro	Gly	Pro	Pro	Asn	Asn	Gly	Lys	His	Cys	Gly	Asn	Pro	Arg	Asp	
		115					120					125				
Phe	Phe	Cys	Lys	Gln	Trp	Asn	Cys	Val	Thr	Ser	Asn	Asp	Gly	Tyr	Trp	
	130					135					140					
Lys	Trp	Pro	Thr	Ser	Gln	Gln	Asp	Arg	Val	Ser	Phe	Ser	Tyr	Val	Asn	
145					150						155				160	
Thr	Tyr	Thr	Ser	Ser	Gly	Gln	Phe	Asn	Tyr	Leu	Thr	Trp	Ile	Arg	Thr	
				165					170					175		
Gly	Ser	Pro	Lys	Cys	Ser	Pro	Ser	Asp	Leu	Asp	Tyr	Leu	Lys	Ile	Ser	
			180					185					190			
Phe	Thr	Glu	Lys	Gly	Lys	Gln	Glu	Asn	Ile	Leu	Lys	Trp	Val	Asn	Gly	
		195					200					205				
Met	Ser	Trp	Gly	Met	Val	Tyr	Tyr	Gly	Gly	Ser	Gly	Lys	Gln	Pro	Gly	
	210					215					220					
Ser	Ile	Leu	Thr	Ile	Arg	Leu	Lys	Ile	Asn	Gln	Leu	Glu	Pro	Pro	Met	
225					230					235					240	
Ala	Ile	Gly	Pro	Asn	Thr	Val	Leu	Thr	Gly	Gln	Arg	Pro	Pro	Thr	Gln	
				245					250					255		
Gly	Pro	Gly	Pro	Ser	Ser	Asn	Ile	Thr	Ser	Gly	Ser	Asp	Pro	Thr	Glu	
			260					265					270			
Ser	Asn	Ser	Thr	Thr	Lys	Met	Gly	Ala	Lys	Leu	Phe	Ser	Leu	Ile	Gln	
		275					280					285				
Gly	Ala	Phe	Gln	Ala	Leu	Asn	Ser	Thr	Thr	Pro	Glu	Ala	Thr	Ser	Ser	
	290					295					300					
Cys	Trp	Leu	Cys	Leu	Ala	Ser	Gly	Pro	Pro	Tyr	Tyr	Glu	Gly	Met	Ala	
305					310					315					320	
Arg	Arg	Gly	Lys	Phe	Asn	Val	Thr	Lys	Glu	His	Arg	Asp	Gln	Cys	Thr	
				325					330					335		
Trp	Gly	Ser	Gln	Asn	Lys	Leu	Thr	Leu	Thr	Glu	Val	Ser	Gly	Lys	Gly	
			340					345					350			
Thr	Cys	Ile	Gly	Lys	Val	Pro	Pro	Ser	His	Gln	His	Leu	Cys	Asn	His	
		355					360					365				
Thr	Glu	Ala	Phe	Asn	Gln	Thr	Ser	Glu	Ser	Gln	Tyr	Leu	Val	Pro	Gly	
	370					375					380					
Tyr	Asp	Arg	Trp	Trp	Ala	Cys	Asn	Thr	Gly	Leu	Thr	Pro	Cys	Val	Ser	
385					390					395					400	
Thr	Leu	Val	Phe	Asn	Gln	Thr	Lys	Asp	Phe	Cys	Ile	Met	Val	Gln	Ile	
				405					410					415		
Val	Pro	Arg	Val	Tyr	Tyr	Tyr	Pro	Glu	Lys	Ala	Ile	Leu	Asp	Glu	Tyr	
			420					425					430			
Asp	Tyr	Arg	Asn	His	Arg	Gln	Lys	Arg	Glu	Pro	Ile	Ser	Leu	Thr	Leu	
		435														



Arg	Glu	Lys	Glu	Thr	Thr	Gln	Gly	Trp	Phe	Glu	Gly	Trp	Phe	Asn	Arg
				565					570					575	
Ser	Leu	Trp	Leu	Ala	Thr	Leu	Leu	Ser	Ala	Leu	Thr	Gly	Pro	Leu	Ile
			580					585					590		
Val	Leu	Leu	Leu	Leu	Leu	Thr	Val	Gly	Pro	Cys	Ile	Ile	Asn	Lys	Leu
		595					600					605			
Ile	Ala	Phe	Ile	Arg	Gln	Arg	Ile	Ser	Ala	Val	Gln	Ile	Met	Val	Leu
	610				615						620				
Arg	Gln	Gln	Tyr	Gln	Ser	Pro	Ser	Ser	Arg	Glu	Ala	Gly	Arg		
625					630					635					